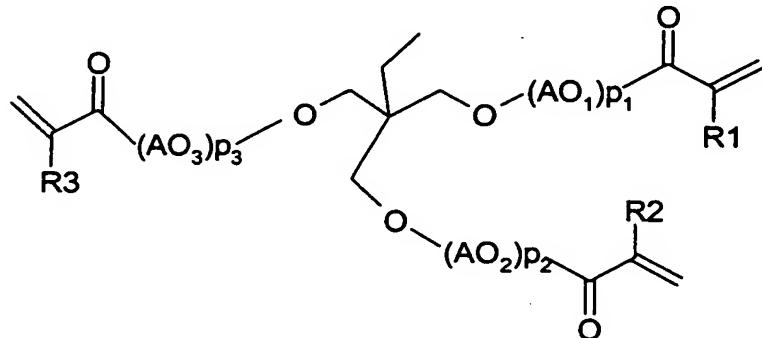


We claim:-

1. An ester mixture comprising at least two esters selected from those of the formulae 1a, 1b or 1c, wherein esters F of the formula I a have the following structure:



where AO as AO₁, AO₂ and AO₃ is independently at each instance EO, PO or BO.

where EO is O-CH₂-CH₂-

10

PO is independently at each instance O-CH₂-CH(CH₃)- or O-CH(CH₃)-CH₂-

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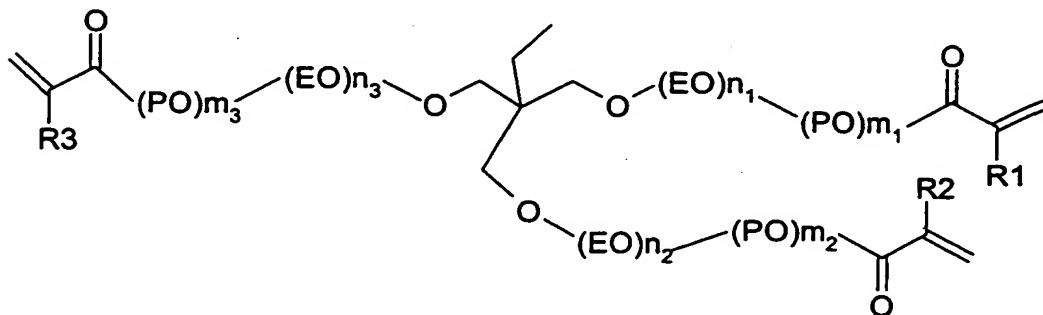
BO is independently at each instance O-CH₂-CH(CH₂-CH₃)- or O-CH(CH₂-CH₃)-CH₂-

p₁ + p₂ + p₃ is 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74 or 75,

20

R₁, R₂, R₃ are independently H or CH₃,

and esters F of the formula I b have the following structure:



25

where EO is O-CH₂-CH₂-

PO is independently at each instance O-CH₂-CH(CH₃)- or
O-CH(CH₃)-CH₂-

5

n₁ + n₂ + n₃ is 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41,
42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59 or
60,

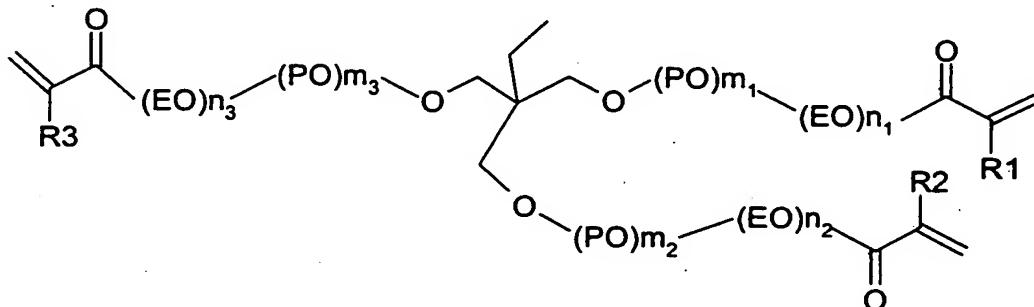
10

m₁ + m₂ + m₃ is 4, 5, 6, 7, 8, 9, 10, 11, 12 or 13,

R₁, R₂, R₃ are independently H or CH₃

and esters F of the formula Ic have the following structure:

15



where EO is O-CH₂-CH₂-

PO is independently at each instance O-CH₂-CH(CH₃)- or
O-CH(CH₃)-CH₂-

20

n₁ + n₂ + n₃ is 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41,
42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59 or
60,

25

m₁ + m₂ + m₃ is 4, 5, 6, 7, 8, 9, 10, 11, 12 or 13,

R₁, R₂, R₃ are independently H or CH₃.

30 2. An ester F in ester mixtures according to claim 1 wherein AO is at all instances
EO, PO or BO, preferably EO.

3. The ester mixtures according to claim 1 or 2 wherein only esters of the formula 1a and 1b or 1a and 1c or 1b and 1c and preferably 1b and 1c are present.

5 4. The ester mixtures according to any of claims 1 to 3 wherein esters of the formula 1b or 1c are present in the ester mixture at not less than 10% by weight, preferably not less than 20% by weight, especially not less than 30% by weight.

10 5. An ester F in ester mixtures according to any of claims 1 to 4 wherein $p_1 + p_2 + p_3$ is 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49 or 50.

15 6. An ester F in ester mixtures according to any of claims 1 to 5 wherein n_1, n_2, n_3 are independently 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19 or 20.

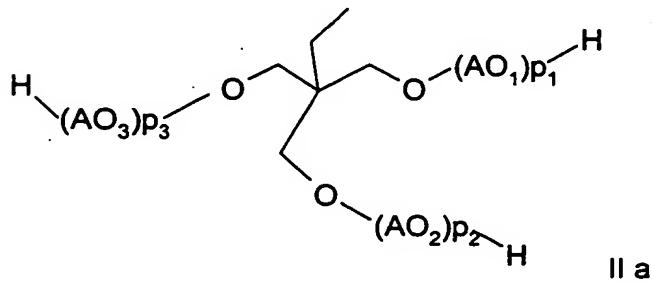
7. An ester F in ester mixtures according to any of claims 1 to 6 wherein m_1, m_2, m_3 are independently 1, 2, 3, 4 or 5.

20 8. An ester F in ester mixtures according to any of claims 1 to 7 wherein $m_1 + m_2 + m_3$ is 5 or 10.

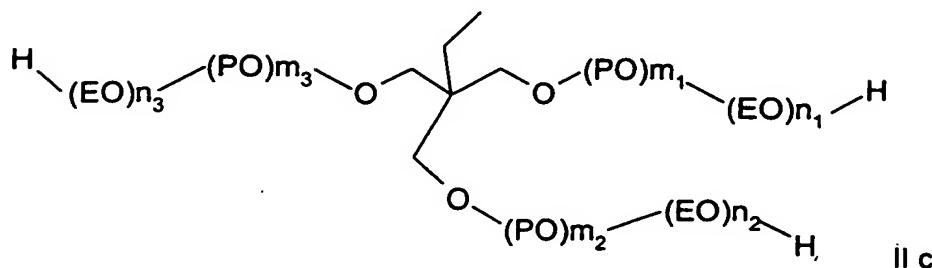
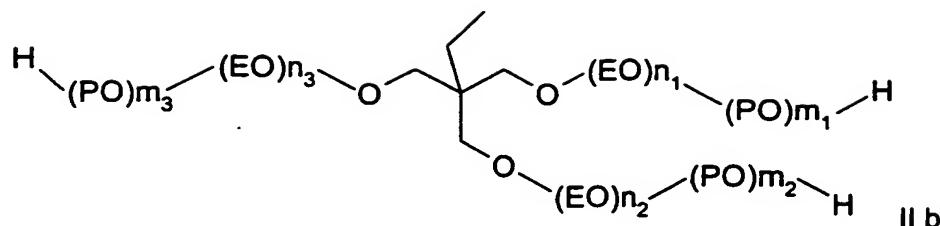
9. An ester F in ester mixtures according to any of claims 1 to 8 wherein $n_1 + n_2 + n_3$ is 30 or 50.

25 10. An ester F in ester mixtures according to any of claims 1 to 9 wherein R1, R2 and R3 are identical and preferably H.

30 11. A process for preparing an ester mixture of esters F according to any of claims 1 to 10 from mixtures of alkoxylated trimethylolpropanes of the formula II a, II b or II c



57



where AO, EO, PO, p1, p2, p3, n1, n2, n3, m1, m2 and m3 are each as defined

5 in any of claims 1 to 10,

with (meth)acrylic acid, comprising the steps of

- a) reacting a mixture of alkoxyLATED trimethylolpropanes with (meth)acrylic acid in the presence of at least one esterification catalyst C and of at least one polymerization inhibitor D and optionally also of a water-azeotroping solvent E to form an ester F,
- b) optionally removing from the reaction mixture some or all of the water formed in a), during and/or after a),
- f) optionally neutralizing the reaction mixture,
- h) when a solvent E was used, optionally removing this solvent by distillation, and/or
- i) stripping with a gas which is inert under the reaction conditions.

12. A process according to claim 11 wherein

20

- the molar excess of (meth)acrylic acid to the mixture of alkoxyLATED trimethylolpropanes is at least 3.15:1 and
- the optionally neutralized (meth)acrylic acid present in the reaction mixture after the last step substantially remains in the reaction mixture.

25

13. A process according to either of claims 11 and 12 wherein the (meth)acrylic acid is not more than 75% by weight removed from the reaction mixture obtained after the last step, which reaction mixture contains the ester mixture of esters F.

30 14. A process according to any of claims 11 to 13 wherein the reaction mixture

obtained after the last step, which comprises the ester mixture of esters F, has a DIN EN 3682 acid number of at least 25 mg of KOH/g.

15. A process according to any of claims 11 to 14 wherein the reaction mixture obtained after the last step, which comprises the ester mixture of esters F, has a (meth)acrylic acid content of at least 0.5% by weight.
- 5 16. A process according to any of claims 13 to 17 wherein the molar ratio of (meth)acrylic acid to the mixture of alkoxylated trimethylolpropanes in reaction a) is at least 15:1.
- 10 17. A process for preparing a crosslinked hydrogel, comprising the steps of
 - 15 k) polymerizing an ester mixture of esters F according to any of claims 1 to 10, with (meth)acrylic acid, with optionally additional monoethylenically unsaturated compounds N and optionally also at least one further copolymerizable hydrophilic monomer M in the presence of at least one free-radical initiator K and optionally of at least one grafting base L,
 - 20 l) optionally postcrosslinking the reaction mixture obtained from k),
 - 25 m) drying the reaction mixture obtained from k) or l), and
 - 30 n) optionally grinding and/or sieving the reaction mixture obtained from k), l) or m).
18. A process for preparing a crosslinked hydrogel, comprising steps a) to i) according to any of claims 11 to 16 and additionally
 - 35 k) polymerizing the reaction mixture from one of stages a) to i) if performed, with optionally additional monoethylenically unsaturated compounds N and optionally also at least one further copolymerizable hydrophilic monomer M in the presence of at least one free-radical initiator K and optionally of at least one grafting base L,
 - l) optionally postcrosslinking the reaction mixture obtained from k),
 - m) drying the reaction mixture obtained from k) or l), and
 - n) optionally grinding and/or sieving the reaction mixture obtained from k), l) or m).
19. Polymer obtainable according to a process according to either of claims 17 and 18.
- 40 20. Crosslinked hydrogel comprising at least one hydrophilic monomer M in

copolymerized form crosslinked with an ester mixture of esters F according to any of claims 1 to 10.

21. Crosslinked hydrogel comprising at least one hydrophilic monomer M in copolymerized form crosslinked with a reaction mixture which comprises the ester mixture of esters F and is obtainable according to a process of claims 11 to 16.
5
22. Use of a polymer according to either of claims 20 and 21 in hygiene articles, packaging materials and in nonwovens.
10
23. A composition of matter comprising
 - from 0.1% to 40% by weight of an ester mixture of esters F according to any 15 of claims 1 to 10 and (meth)acrylic acid,
 - 0.5 – 99.9% by weight of at least one hydrophilic monomer M,
 - 0 – 10% by weight of at least one esterification catalyst C,
 - 0 – 5% by weight of at least one polymerization inhibitor D, and
 - 0 – 10% by weight of a solvent E,
20 with the proviso that the sum total is always 100% by weight.
24. The composition of matter according to claim 23 wherein every ester F is present in the ester mixture at not more than 2% by weight based on the hydrophilic monomer M.
25
25. A composition of matter according to either of claims 23 and 24, further comprising
 - a diluent G ad 100% by weight.
30
26. Crosslinked hydrogel obtainable from a composition of matter according to any of claims 23 to 25 and additionally
 - I) optionally postcrosslinking the reaction mixture obtained,
 - m) drying the reaction mixture obtained directly or from I), and
 - n) optionally grinding and/or sieving the reaction mixture obtained directly or from I) or m).
35
27. Use of a reaction mixture obtainable according to any of claims 11 to 15 or of a composition of matter according to any of claims 23 to 25
40

- as a free-radical crosslinker of water-absorbing hydrogels,
- as a starting material for preparing polymer dispersions,
- as a starting material for preparing polyacrylates,
- 5 - as a paint raw material, or
- as a cement additive.

28. Use of an ester mixture of esters F according to any of claims 1 to 10 for preparing hydrogel-forming polymers capable of absorbing aqueous fluids.